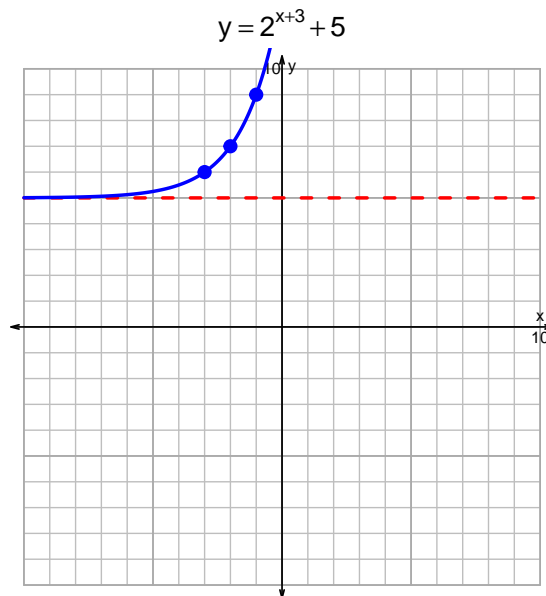
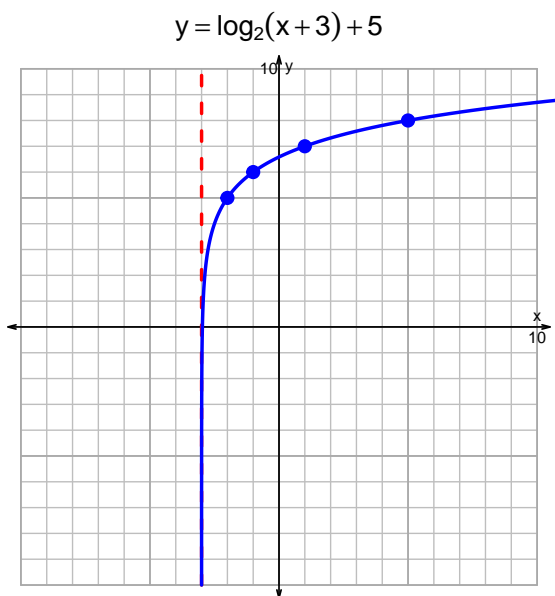


Name: \_\_\_\_\_

Date: \_\_\_\_\_

### s18QUIZ: EXP LOG (SOLUTION v1)

1. Graph  $y = \log_2(x + 3) + 5$  and  $y = 2^{x+3} + 5$  on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{3}{7}\right) \cdot 2^{5t/4}$$

Divide both sides by  $\frac{3}{7}$ .

$$\frac{11 \cdot 7}{3} = 2^{5t/4}$$

Take log, base 2, of both sides.

$$\log_2 \left( \frac{11 \cdot 7}{3} \right) = \frac{5t}{4}$$

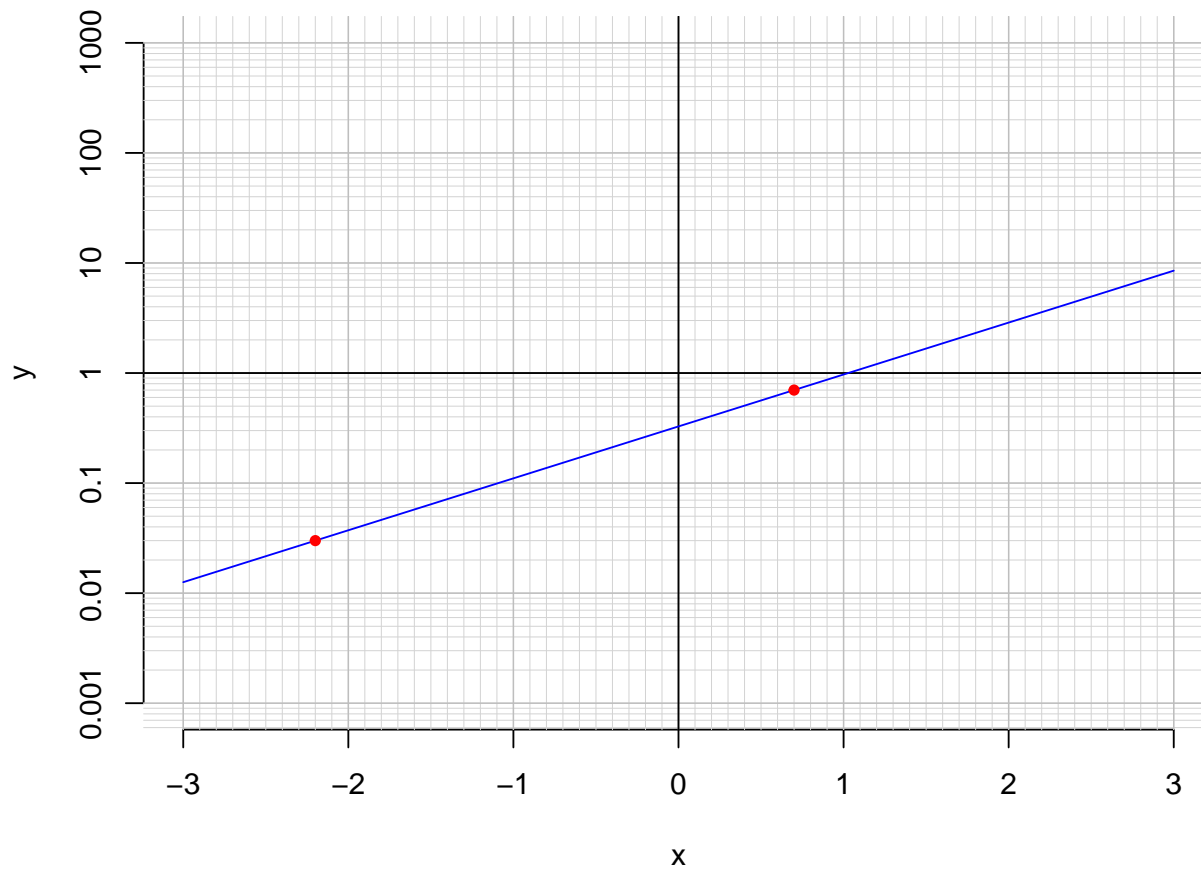
Divide both sides by  $\frac{5}{4}$ .

$$\frac{4}{5} \cdot \log_2 \left( \frac{11 \cdot 7}{3} \right) = t$$

Switch sides.

$$t = \frac{4}{5} \cdot \log_2 \left( \frac{11 \cdot 7}{3} \right)$$

3. An exponential function  $f(x) = 0.327 \cdot e^{1.09x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(0.7)$ .

$$f(0.7) = 0.7$$

- b. Express  $f^{-1}(x)$ , the inverse of  $f$ .

$$f^{-1}(x) = \frac{1}{1.09} \cdot \ln\left(\frac{x}{0.327}\right)$$

- c. Using the plot above, evaluate  $f^{-1}(0.03)$ .

$$f^{-1}(0.03) = -2.2$$